REMARKS/ARGUMENTS

Reconsideration of the application is requested.

Claims 1-3 and 5-10 remain in the application. Claim 1 has been amended. Claim 4 has been cancelled.

In the section entitled "Claim Rejections - 35 USC § 103" on pages 2-3 of the above-mentioned Office action, claims 1-3 and 5-10 have been rejected as being unpatentable over Ye et al. (US Pat. No. 6,080,529) in view of Subramanion et al. (US Pat. No. 5,986,344) under 35 U.S.C. § 103(a).

The rejection has been noted and claim 1 has been amended in an effort to even more clearly define the invention of the instant application. Support for the changes is found on page 15, lines 4-5 and page 18, lines 9-12 of the specification.

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful.

Claim 1 calls for, inter alia:

> providing an organic antireflection layer on a semiconductor layer, the semiconductor layer being made of silicon dioxide;

providing a photoresist layer as an etching mask for the organic antireflection layer underneath it;

etching the organic antireflection layer with an etching gas composition containing at least 80% hydrogen and nitrogen;

achieving a selectivity of more than 1:50 of the organic antireflection layer etching in relation to etching the semiconductor layer lying underneath the organic antireflection layer; and

achieving an etching profile with an anisotropy factor of substantially 1.

It is the object underlying the invention of the instant application to provide an anisotropic dry etching process for an organic antireflection layer disposed on a silicon dioxide layer, which is distinguished by high selectivity, improved structure accuracy and a good compatibility with the subsequent etching processes. This object is achieved as specified in amended claim 1 of the instant application by providing a providing a photoresist layer as an etching mask for the organic antireflection layer, by etching the organic antireflection layer with an etching gas composition containing at least 80% hydrogen and nitrogen, whereby a selectivity of more than 1:50 of the organic antireflection layer etching in relation to etching the silicon dioxide layer is achieved and whereby an etching profile with an anisotropy factor of substantially 1 is achieved.

Ye et al. teach a method of anisotropically etching an organic polymer layer provided on a tantalum nitride layer with an etchant consisting of hydrogen and nitrogen. Ye et al. further teach that the organic polymer layer may be a FLARE layer. Moreover, Subramanion et al. teach that FLARE functions as an antireflection layer. However, neither Ye et al. nor Subramanion et al. teach an etch stop layer for an organic antireflection layer made of silicon dioxide, the organic antireflection layer having a selectivity of more than 1:50 in relation to the silicon dioxide etch stop layer. Ye et al. teach that a silicon oxide is used as an etch stop layer underneath a phtoresist layer for a hydrogen-nitrogen etch chemistry. Subramanion et al. teach that the etching characteristics of a photoresist layer and an organic antireflection layer are similar to each other but different from the etching characteristics of silicon dioxide. However, it is not derivable from this teaching that an organic antireflection layer may be etched with a silicon oxide etch stop layer by an etchant containing at least 80% hydrogen and nitrogen with such a high selectivity of 1:50 or more. Ye et al. disclose in column 12, lines 44-48, in conjunction with Figs. 2B and 2C, that a photoresist layer removal is carried out by a hydrogen-nitrogen etch chemistry, the etching process being stopped on a silicon dioxide layer. However, such a photoresist etching process does not make use of such a high

selectivity of 1:50 or more as achieved in the invention of the instant application since the silicon dioxide layer does not have to be untouched at the end of the etching process. Fig. 2D of Ye et al. shows that the silicon dioxide layer is optionally removed directly after the photoresist removal step. In consequence, it would be sufficient for the silicon oxide layer to have a selectivity with respect to the photresist layer of less than 20 to 1 when etching a phtoresist layer on top with a hydrogen-nitrogen etch chemistry.

Moreover, neither Ye et al. nor Subramanion et al. teach an etching profile with an anisotropy factor of substantially 1 when etching an organic antireflection layer with a photoresist mask on top with an etching gas composition containing at least 80% hydrogen and nitrogen. Ye et al. teach that an organic layer and a photoresist layer may be anisotropically etched by a hydrogen-nitrogen etch chemistry. However, Ye et al. are completely silent with respect to the anisotropy factor achieved when etching the organic layer (reference sign 222). Fig .2B of Ye et al. further shows that the etching profile of the photoresist on top (reference sign 224) is heavily deteriorated. Moreover, Subramanion et al. teach a hard mask for etching an organic antireflection layer.

It is accordingly believed to be clear that none of the references, whether taken alone or in any combination, either show or suggest the features of claim 1. Claim 1 is, therefore, believed to be patentable over the art and since all of the dependent claims are ultimately dependent on claim 1, they are believed to be patentable as well.

In view of the foregoing, reconsideration and allowance of claims 1-3 and 5-10 are solicited.

In the event the Examiner should still find any of the claims to be unpatentable, counsel would appreciate a telephone call so that, if possible, patentable language can be worked out. In the alternative, the entry of the amendment is requested as it is believed to place the application in better condition for appeal, without requiring extension of the field of search.

If an extension of time for this paper is required, petition for extension is herewith made. Please charge any fees which might be due with respect to 37 CFR Sections 1.16 and 1.17 to

the Deposit Account of Lerner and Greenberg, P.A., No. 12-1099.

Respectfully submitted,

Yonghong Chen
Reg. No. 56,150

Yonghong Chen
For Applicants

YC

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Lerner and Greenberg, P.A.
Post Office Box 2480
Hollywood, FL 33022-2480
Tel: (954) 925-1100
Fax: (954) 925-1101